

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A computer-implemented method for construction of a three-dimensional model of a real-world object ~~model~~ using a computer aided design system, the method comprising:
constructing within the memory of a computer system the three-dimensional model of a real-world object by:
constructing a feature of a the three-dimensional model of a thereal-world object based on data input by a user; and
automatically identifying a previously defined part from a part library, the part comprising a model of another three-dimensional object, said part being configured to compatibly couple with the feature, and the part being identified based on design attributes of the feature.
2. (Original) The method of claim 1 further comprising automatically positioning the identified part in a coupling relationship with the feature.
3. (Original) The method of claim 1 wherein identifying the part comprises selecting a part model from a part model library.

4. (Original) The method of claim 3 wherein the part model comprises a first component comprising an adjustable geometry and identifying the part comprises adjusting the geometry of the first component based on an attribute of the feature.
5. (Previously presented) The method of claim 4 further comprising:
storing a new part in the part model library, the new part comprising an identified compatible part and the adjusted geometry.
6. (Original) The method of claim 4 wherein:
the feature comprises a hole comprising a depth attribute;
the selected part model comprises a model of a fastener;
the adjustable geometry of the first component comprises a length of an axis of the fastener; and
adjusting the geometry comprises computing a length of the axis based on the depth attribute of the hole.
7. (Currently Amended) A computer-implemented method for processing a three-dimensional design model of a real-world object ~~model~~ generated by a computer-aided design system, the method comprising:
constructing within the memory of a computer system the three-dimensional design model of the real-world object by:
constructing a feature of a the three-dimensional design model ~~of a real-world object~~
based on data received from a user; and
automatically selecting a previously defined part from a part library, the part being
configured to couple with the constructed feature, the part being selected from a parts library, the parts library comprising data representing a plurality of parts and at least one geometric characteristic of each of the parts.

8. (Original) The method of claim 7 further comprising automatically positioning the selected part in a coupling relationship with the constructed feature.
9. (Previously presented) The method of claim 7 wherein constructing the feature comprises specifying a geometric characteristic of the constructed feature, the geometric characteristic of the constructed feature constraining a positioning of the part with respect to the constructed feature.
10. (Previously presented) The method of claim 9 wherein selecting comprises selecting based on conformance between the geometric characteristic of the constructed feature and the at least one geometric characteristic of one of the plurality of parts in the parts library.
11. (Original) The method of claim 7 wherein the model data details construction of the design model based on a hierarchical relationship among components, the components being selected from the group consisting of a part, an assembly, and a subassembly.
12. (Currently Amended) A method of constructing a three-dimensional model of a real-world object ~~model~~ using a computer-aided design system, the method comprising:
constructing within the memory of a computer system the three-dimensional model of the real-world object by:
 - selecting a feature of ~~a~~ the three-dimensional model, said feature representing a physical element of ~~a~~ the real-world object;
 - generating a component configured to couple with the feature, said component modeling a second real-world object and said component being generated by:

querying a component model repository storing previously defined components to retrieve a previously defined component model, said retrieving being based on compatibility between an attribute of the component model and a design attribute of the feature;

constructing a first component from the component model; and

establishing a coupling relationship between the first component and the feature.

13. (Previously presented) The method of claim 12 wherein constructing the first component comprises:

associating configuration data with an instance of the component model, the configuration data representing a value of a modifiable attribute of the component model.

14. (Original) The method of claim 13 wherein:

the value is calculated based on an attribute of the feature.

15. (Original) The method of claim 12, wherein the coupling arrangement comprises a parametric relationship between the first component and the feature.

16. (Original) The method of claim 12 further comprising:
receiving data from a user to modify the feature;
automatically generating a modified component; and
establishing a coupling relationship between the modified component and the modified feature.
17. (Original) The method of claim 16 wherein generating a modified component comprises:
searching the repository for a second component based on an attribute of the modified
feature;
retrieving a second component model from the repository;
constructing a second component from the second component model; and
replacing the first component with the second component.
18. (Original) The method of claim 12 wherein querying the component model repository
comprises formulating a database query using a description of the feature.
19. (Original) The method of claim 12 wherein the component model repository is extended by
adding an additional component model.
20. (Previously presented) The method of claim 12 wherein the component model can be
removed from the component model repository.
21. (Original) The method of claim 12 wherein the component model comprises a configuration
and a reference to a model representing a group of components.

22. (Previously presented) The method of claim 21, wherein the configuration includes data that further specifies the model representing the group of components.
23. (Previously presented) A computer-readable data storage medium comprising instructions for causing a computer to:
- construct within the memory of a computer system a three-dimensional model of a real-world object, said instructions to construct within the memory further comprising instructions to:
- construct a feature of ~~a~~the three-dimensional model of ~~a~~the real-world object based on data input by a user; and
- automatically identify a previously defined part from a part library, the part comprising a model of another three-dimensional object, said part being configured to compatibly couple with the feature, the part being identified based on at least one design attribute of the feature.
24. (Previously presented) The data storage medium of claim 23 wherein,
- the feature comprises a hole comprising a depth attribute; and
- the instruction to automatically identify a part comprise instructions to:
- select a fastener part model comprising an adjustable length;
- form a fastener part by associating length configuration data to the fastener part model, the length configuration data establishing the length of the fastener part based on the depth attribute of the hole;
- automatically position the fastener part in a coupling relationship with the hole; and
- store the fastener part in a part model library.
25. (Currently Amended) A computer-aided design system comprising:

a processing unit coupled to a database and a program storage medium, the database comprising a library of previously defined model parts and geometric characteristics of each part, and the program storage medium comprising instructions to configure the processor to construct within the memory of a computer system the three-dimensional design model of an object, said memory further comprising instructions to:
construct a feature of a the three-dimensional design model based on input from a user;
and
query the database to automatically construct a part from a model in the library of previously defined model parts, the constructed part being configured to couple with the feature.

26. (Previously presented) The system of claim 25 wherein the program storage medium further comprises instructions to automatically position the constructed part in a coupling relationship with the feature.

27. (Original) The system of claim 25 wherein the processing unit comprises a computer cluster and the database comprises a remote distributed database.

28. (Original) The system of claim 25 wherein the instructions to construct the feature comprises instructions to receive from a user data specifying a geometric characteristic of the feature, the geometric characteristic constraining a positioning of the part with respect to the feature.

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29. (Previously presented) The method of claim 25 wherein the three-dimensional design model is represented by a hierarchical data structure detailing construction of the design model based on a hierarchical relationship among components, the components being selected from the group consisting of a part, an assembly, and a subassembly.